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SOME COSTA RICAN BEES.

BY J. C. CRAWFORD, JR.

The material on which this paper is based was for the most part collected by the author in odd moments while doing other work in 1903. In all only about 400 specimens were taken. Some specimens collected by Prof. L. Bruner and Messrs. Cary and Carriker in 1902, as well as a few received from other people while in Costa Rica, were examined, all these being properly credited. Those having no collector's name after them were taken by the author. In addition to the species mentioned in the paper, quite a number of others were taken, which at present cannot be identified, among them being about a dozen species of *Melipona*.

The localities from which specimens were examined are as follows: on the Atlantic Slope, Guacimo (450 feet); Guapiles (1000 feet); Cartago (4450 feet); Volcano Irazu (9000 feet). On the Pacific Slope, San Jose (3550 feet); Monte Redondo (about 4000 feet); Pozo Azul, on the Rio Grande near the Pacific Ocean.

The types, except that of *Dialictus costaricensis*, have been deposited in the National Museum; cotypes have been given the American Entomological Society.

BOMBIDÆ.

***Bombus ephippiatus* var. *lateralis* Sm.** ♀.—Pubescence on head dark brown, mixed with lighter on vertex; on mesothorax above rich brown, appearing reddish or fox color in certain lights; elsewhere on mesothorax yellow; legs with brown pubescence; wings not deeply infuscated; pubescence of first abdominal segment and basal middle of second yellow; of rest of abdomen bright red.

♂.—Pubescence of second and third abdominal segments sometimes reddish.

Volcano Irazu, from one nest many ♀ ♀ and ♂ ♂ (L. Bruner); Cartago (June).

San Jose, June, on *Dahlia*. The most common species taken. From Cartago (June) I received about one hundred workers.

This is the species described as *leucomelas* Crawford and Swenk. Dalle Torre has wrongly credited this species to Asia, as the type came from Chiriqui, so the species was overlooked and redescribed.

EUGLOSSIDÆ.

Euglossa cordata Linn.

Guapiles, March, June. Taken making nests between the boards of the roofing. From Pozo Azul (June 15th, Carriker), from a nest on the under side of a leaf one ♀ that is entirely reddish coppery, with green reflections in certain lights; legs more green. Except for the color this specimen agrees perfectly with typical *cordata*, and is only a color variety.

Euglossa bicolor Ducke.

One ♀ from Pozo Azul (May 20, 1902, Carriker), having the vertex and thorax above, first and second abdominal segments deep violaceous, rest of insect all green.

Eulema mexicana var. **connexa** Friese.

One ♀ at Guapiles (March).

Eulema fasciata Lep.

Pozo Azul, June (Carriker); Guapiles, March; San Jose, all ♀ ♀.

Centris nitida Sm.

San Jose, in May and June, 4 ♀.

Centris difformis Sm.

Pozo Azul, June 15th (Carriker), one ♀.

Centris Friesei n. sp. ♀.—Head and thorax black, abdomen and venter red; mandibles, except tips, labrum, except anterior border and a basal medial spot, a transverse spot on each side of clypeus which is inclined slightly upward toward the middle, anterior and intermediate knees and narrow anterior orbits as high as insertion of antennæ, yellow; labrum coarsely punctured, twice as wide as long, fringed with yellow hair; clypeus wider than long, very sparsely and finely punctured, concave on the apical half, the anterior border raised into a carina, which laterally terminates in a slight elevation; basally two large but not very apparent elevations on the clypeus; inner side of mandibles with a large tooth near apex and a small sharp projection medially; pubescence of head, thorax and pleura olive-grey, composed of dirty whitish hairs, each tipped with black; pubescence of cheeks white; flagellum ferruginous beneath; mesothorax closely punctured, scutellum sparsely so; wings very dark, splendidly iridescent; legs black, posterior pair reddish behind; pubescence of anterior pair light; of intermediate tibiæ reddish golden, the tarsi with blackish brown, fringed with reddish; of posterior pair reddish golden, rufous internally and on tarsi and darker at apex of tarsi; abdomen finely and sparsely punctured, with olive-grey pubescence on first segment, and on apical segments reddish golden. Length 20 mm.; width 7 mm.

Three specimens, Guacimo, June 19th to 21st.

Differs from the description of *personata* Sm. in the concave clypeus and different face markings; *breviceps* Friese has similar pubescence and concave 4-gibbous clypeus, but has different face markings and 4 toothed mandibles.

The specimens were secured on the veranda of a house where they were making nests between the boards of the roofing. Other bees similarly taken were *C. labrosa*, *simplex*, and at Guapiles *Euglossa cordata* and *Eulema mexicana connexa*.

Centris proxima Friese.

Common at Guapiles, in March. All the specimens taken are somewhat smaller than the size given by Friese, the ♂ being only about 15 mm. long; the tooth on the hind tibiæ of the ♂ has one side straight and the other curved; in the ♀ the pubescence of the legs is somewhat lighter than as given by the description; otherwise as described. Three ♂, 12 ♀.

Centris labrosa Friese.

One ♀ from Pozo Azul, in June (Carriker).

Centris labrosa var. **simplex** Friese.

The specimens taken are even smaller than the length given, being only 11 mm. in the ♀, and have the wings clear. Four ♀, Guacimo, June.

Centris lanipes Fabr.

A single female from San Jose, in June.

Centris pœcila var. **segregatus** n. var. ♀.—Labrum, mandibles, malar space, triangular lateral face marks, small supraclypeal mark, scape in front, anterior and intermediate knees and narrow lines on anterior tibiæ externally, all yellowish; pubescence on vertex black, on basal half of fourth and segmentz 5-6 fulvous; otherwise as described for *pœcila*. Length 15 mm.

Four ♀, San Jose, May 15th and 25th, June 1st.

ANTHOPHORIDÆ.

Macroglossapis rubricata Sm.

The specimens appear to differ slightly from the typical form. Pubescence of mesothorax above black, with fulvous at the tegulæ, and a line of the same at the rear of the mesonotum; black on disc of postscutellum, fulvous on metathorax and pleura, white on

cheeks; red of abdomen confined to discs of first two segments; apical margins of segments 1-4 broadly whitish hyaline. One specimen is entirely without the red on the abdomen. Four ♀, San Jose, June 25-30, on *Dahlia*.

Macroglossapis Cockerelli n. sp. ♀.—Black, discs of segments 1 and 2 largely ferruginous, narrow apical margin of first and apical half of segments 2-4 whitish hyaline; head and thorax finely sericeously lineolate; clypeus with large, shallow irregular punctures and a medial, longitudinal, shiny, impunctate carina, not lineolate; labrum whitish testaceous; mandibles medially, narrow apical margin of clypeus and flagellum beyond first joint even above, ferruginous; mesothorax finely rather closely punctured; pubescence of head and pleura griseous, of thorax above and a spot in front of tegulæ and on base of abdomen light fulvo-ochraceous; wings yellow, nervures and stigma honey color; legs dark, apical joints of tarsi ferruginous; pubescence of legs whitish, ferruginous on inner side of tarsi; abdomen finely sericeously lineolate, finely rather sparsely punctured; covered with thin short whitish hairs, on the sides of the abdomen and on discs of apical segments a few black hairs; pubescence of 5-6 brown. Length about 11 mm.

San Jose, 5 ♀, May 25th to June 9th.

The abdomen is somewhat similar to that of *rubricata*, but the apical margins of the segments are whiter and more contrasting. It differs widely from that species in the light pubescence of the thorax.

Apparently like *modesta* in the pubescence of the thorax, but that species does not have any red on the abdomen nor the apical margins of the abdominal segments light.

Macroglossapis nigravillosa n. sp. ♂.—Black, head and thorax sericeously lineolate, finely and sparsely punctured, clypeus medially elevated but lineolate like the rest; labrum white; clypeus anteriorly narrowly ferruginous; antennæ nearly as long as the body, obscurely ferruginous beneath; pubescence black, except a little at sides of face, a small spot between antennæ, cheeks entirely, narrow line over tegulæ extending around rear of mesonotum, more or less on metathorax, base and apex of abdomen and under side of thorax and abdomen where it is white; wings dusky, nervures dark; legs dark, obscurely ferruginous behind, small joints of tarsi reddish; abdomen sericeously lineolate, finely and sparsely punctured, apical margins of segments reddish; apex of abdomen emarginate; apical half of ventral segments testaceous, with ferruginous on bases of segments 1 and 2. Length 10-11 mm.

Six specimens from San Jose, June 23rd and 25th; on *Impatiens*; June 28th on *Dahlia*.

Differs from the descriptions of the other males in the almost entirely black pubescence of the thorax; *montezuma* has the pubescence of the thorax anteriorly black, posteriorly rufous; *albilabris* ♀ has the pubescence above black but no light, apical margins of

abdominal segments not lighter, and is apparently a much larger species, the ♀ being 16 mm.

Exomalopsis similis Cress.

A large series from Guacimo in June, and from Guapiles in March, both sexes being taken.

Mr. Viereck compared this species with the type and says it is identically the same.

Entechuia fulvifrons Sm.

Juan Vinas, March 11th (L. Bruner); Monte Redondo, March 3rd (L. Bruner), 3 ♀.

XYLOCOPIDÆ.

Xylocopa cornuta Fabr.

Two ♀, one taken at San Jose in June, and the other received from a curio dealer, who did not know the place it was taken.

Xylocopa barbata Fabr.

One ♀, San Jose, May 30th. The steel-blue color, with the white pubescence behind the eyes and on the lateral margins of the fourth and fifth abdominal segments, make this a striking species.

Xylocopa tabaniformis Sm.

On ♀ on May 26th, at San Jose.

PANURGIDÆ.

Hylaesoma Ashmeadi n. sp. ♀—Black, form narrow, clothed with thin ochraceous pubescence, abundant on ventral segments; head and thorax finely tessellate, slightly shining, very finely, but not closely punctured; antennæ, tarsi and knees testaceo-ferruginous; face long, eyes converging below; base of metathorax with a longitudinal line medially, and on each side of this a few weak wrinkles not reaching apex, no distinct enclosure; wings hyaline, nervures and stigma dark brown; abdomen impunctate, shining, segments transversely striatulate. Length $3\frac{1}{2}$ mm.

San Jose, June 14th.

This species is close to the type of the genus, but differs in the head and thoxax much less shining, punctures of mesothorax smaller, second submarginal comparatively large, first recurrent nervure nearer base of second submarginal cell, base of metathorax without triangular enclosure, etc.

This genus is peculiar in the female, having the antennæ strongly clavate, as well as in the very prominent thorax and the peculiar venation.

ANDRENIDÆ.

Agapostemon nasutus Sm. ♀.—Head and thorax bluish green, punctation as in the ♂; face broad; clypeus green, not bent anteriorly as in the ♂, but with a slight medial depression, apically a transverse yellow band bordered on each side by black, the yellow produced to a point medially at rear; flagellum reddish beneath; tubercles with a yellow spot; legs dark, tarsi ferruginous; front knees and a line down the front of anterior tibiæ yellow; scopa yellowish, black externally; abdomen finely and closely punctured, segment 1 reddish at base; a band of appressed white pubescence on bases 2-5; base of first segment with erect light pubescence; other pubescence on abdomen dark; venter obscurely ferruginous. Length 10 mm.

Six ♀, San Jose, June 25th, on *Dahlia*; Guapiles, March 7th. Many males, San Jose, March 7, 1902 (M. Cary), June 25th; Guapiles, March 6th and 7th.

Agapostemon vulpicolor n. sp. ♀.—Head and dorsum of thorax deep greenish bronze, clothed with dense bright fulvous pubescence nearly obscuring the surface of the mesonotum; pleura green; head closely and coarsely punctured, confluent so below the antennæ; antennæ dark above, flagellum reddish beneath; mandibles black, tips reddish, a yellow spot at base; clypeus green, anteriorly black (in one specimen a yellow line on the black); mesothorax closely and rather finely punctured, with scattered larger punctures; tegulæ rufous; wings slightly dusky, more so apically; nervures dark, stigma medially honey color; base of metathorax coarsely and irregularly rugose, with a triangular enclosure, the enclosing lines not reaching anterior part of metathorax; legs dark, apical joints of tarsi ferruginous; pubescence of legs reddish yellow, externally brownish black; abdomen black, shining, finely and rather sparsely punctured; segments 2-5 with basal bands of appressed white pubescence, base of first segment with erect light pubescence and a patch of appressed white hair medially on the lateral margins of the segment; pubescence of apical segments black. Length 10 mm.

Six specimens, Volcana Irazu, February (Carriker); San Jose, June 25-26th, on *Dahlia*.

This species differs from all others of the genus known to me by the intensity of the bronze color of the head and mesonotum and the great amount of long fulvous pubescence on the thorax.

Haliectus sudus Vach.—Punctures of head above antennæ about as on mesothorax; face below antennæ usually greenish, clypeus mostly black; hind spur with about four long teeth; abdomen almost olive-green, apical margins of segments narrowly blackish; length 6-6½ mm.

Except for the color of the abdomen this agrees perfectly with the description given by Vachal and it seems certainly the same. It is a very striking species owing to the blue of the head and thorax contrasting with the abdomen and the confused punctuation

of the mesothorax, which is very much like that of *reticulatus* Robt., as is the color of the head and thorax.

Eight ♀, San Jose, May 30-31.

Halictus indistinctus n. sp. ♀.—Head and thorax very obscurely dark olivaceous, appearing almost black, finely roughened and dull; metathorax purplish black; head very finely and closely punctured above antennæ, clypeus and supraclypeal area sparsely so, purplish; mandibles dark, tips red; clypeus produced; facial quadrangle slightly longer than broad; antennæ dark, flagellum dull reddish beneath toward apex; head and thorax with rather abundant long white pubescence, more abundant on cheeks and pleura; mesothorax finely, moderately closely punctured, sparser on disk; median and parapsidal grooves distinct; base of metathorax with fine longitudinal striæ reaching about half-way to apex, beyond this smooth and shining; pleura finely roughened; wings dusky, nervures, stigma and tegulæ piceous; legs dark, inner hind spur with 2-3 long teeth; abdomen black, shining, very finely and sparsely punctured, apical margins of segments very narrowly subtestaceous, showing plainly only on first segment; abdomen clothed with short whitish hairs, more abundant toward apex; lateral basal margins of segments 2-3 with white hair patches. Length 5-5½ mm.

Three ♂, San Jose, June 14th and 21st (Lizano coll.).

Dialictus costaricensis n. s. ♀.—Head and thorax green; face closely and coarsely punctured, clypeus and supraclypeal area finely roughened and sparsely punctured, clypeus anteriorly black; antennæ black, slightly reddish beneath apically; scape reaching anterior ocellus; mesothorax finely roughened and with distinct, rather close and coarse punctures; base of metathorax with many fine irregular lines not reaching apex; tegulæ large and shining, black, punctured anteriorly; wings hyaline, iridescent, nervures testaceous, stigma honey color; second submarginal cell receiving first recurrent nervure about one-third from base, and second recurrent nervure about one-fifth from apex; legs black, apical joints of tarsi more or less ferruginous; inner hind spur with about four long teeth; scopa white; abdomen black, shining, sparsely and finely punctured; segment 1 impunctate; apical margins of segments narrowly testaceous; pubescence of abdomen sparse, more abundant at sides and apically, whitish; venter with long white hair. Length about 4½ mm.

One specimen from San Jose, taken June 25th.

This species differs from those found in the United States by the much closer punctuation of the mesothorax, larger tegulæ, weaker wrinkles of the metathorax, etc.